



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

SW

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/064,462 | 07/17/2002 | Shao-Tsu Kung | CEIP0049USA | 5812 |
| 27765 | 7590 | 12/01/2004 | EXAMINER | |
| NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE) P.O. BOX 506 MERRIFIELD, VA 22116 | | | SMITH, TERRI L | |
| | | ART UNIT | PAPER NUMBER | |
| | | 3729 | | |

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|------------------------------|------------------------|---------------------|--|
| | 10/064,462 | KUNG ET AL. | |
| Examiner | Art Unit | | |
| Terri L. Smith | 3729 | | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 17 July 2002.
2a) This action is **FINAL**. 2b) This action is non-final.
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-13 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. ____ .
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date ____ . 5) Notice of Informal Patent Application (PTO-152)
6) Other: ____ .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 4, 5 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4 and 5 recite the limitation "the major face" in line 2 of each claim. Claim 11 recites the limitation "the same device" in line 3. There is insufficient antecedent basis for these limitations in the claims cited.

Further, the phrase "by the same device" (Claim 11, line 3) is vague and unclear. A device is not disclosed in either Claim 1 or the specification. What is the device?

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 – 7 and 12 – 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim, U.S. Patent 5,978,229.

Regarding Claim 1, Kim discloses positioning the IC package (Fig. 5, element 10) relative to the circuit board (Fig. 5, element 20) such that the major surface of the IC package is

adjacent to a major surface of the circuit board (Fig. 5); electrically connecting the IC package to the circuit board through the plurality of electrical contacts (column 6 lines 17 – 18); and disposing at least one anchor (Fig. 4, elements 50a-d; Fig. 6, elements 64a-d, etc.) mechanically attaching the IC package to the circuit board (column 8, lines 18 – 20); wherein the anchor does not provide an electrical contact between the IC package and the circuit board (Fig. 5).

Regarding Claim 2, Kim discloses the anchor is disposed at a location outside of the perimeter of the plurality of electrical contacts (Fig. 4, elements 50a-d).

Regarding Claim 3, Kim discloses the major surface of the IC package has a rectangular shape (Fig. 4, element 10), and the arrangement of the plurality of electrical contacts is a grid-like array (Fig. 4, element 12).

Regarding Claim 4, Kim discloses the anchors are disposed at four corners of the major face of the IC package (Fig. 4, elements 50a-d).

Regarding Claim 5, Kim discloses the anchors are disposed along four edges of the major face of the IC package (Fig. 4 elements 50a-d).

Regarding Claim 6, Kim discloses the anchors are disposed on edges of the IC package (Fig. 6, elements 64a-d).

Regarding Claim 7, Kim discloses the anchor is a pin (Fig. 4, elements 50a-d).

Regarding Claim 12, Kim discloses the electrical contacts are solder balls (column 5, line 45).

Art Unit: 3729

Regarding Claim 13, Kim discloses the electrical contacts are pins (column 5, lines 45 – 46).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Day et al., U.S. Patent 6,392,887.

Regarding Claim 8, Kim does not disclose the anchor is a metal strap. However, Day discloses a metal strap (Fig. 1, element 46 (spring clip)) to apply a downward force on to the nonconductive connector to allow for compensation in variations in flatness of the package (column 2, lines 42, 43, 52 and 53).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have modified the invention of Kim, by using a spring clip as an anchor, as taught by Day, to apply a downward force on to the nonconductive connector to allow for compensation in variations in flatness of the package (column 2, lines 42, 43, 52 and 53).

7. Claims 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Melton, U.S. Patent 5,186,383.

Regarding Claim 9, Kim does not disclose the anchor is a redundant solder ball. However, Melton discloses a redundant solder ball (Fig. 3, element 3 (solder bump)) to prevent collapse of the component (column 7, lines 64 – 67).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have modified the invention of Kim, by using a redundant solder ball as an anchor, as taught by Melton, to prevent collapse of the component (column 7, lines 64 – 67).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Jamison, U.S. Patent 4,728,022.

Regarding Claim 10, Kim does not disclose the anchor is a strip of solder. However, Jamison discloses a strip of solder (column 1, lines 49 – 50; Fig. 3, element 30 (solder strip); column 5, lines 30, 35, and 37) to provide a means for reliably holding a leaded carrier to a PWB (column 1, lines 31 – 32).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have modified the invention of Kim, by using a strip of solder as an anchor, as taught by Jamison, to provide a means for reliably holding a leaded carrier to a PWB (column 1, lines 31 – 32).

9. Claim 11 is rejected, as best understood, under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Juskey et al., U.S. Patent 6,356,453.

Regarding Claim 11, Kim does not disclose electrically connecting the IC package to the circuit board and disposing anchors mechanically attaching the IC package to the circuit board

are performed simultaneously and by the same device. However, Juskey discloses electrically and mechanically connecting the IC package to the circuit board by reflowing all of the solder bumps simultaneously and by the same device (column 13, lines 25 – 26) to reduce the processing time (column 13, lines 26 – 30).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have modified the invention of Kim, to electrically and mechanically connect the IC package to the circuit board by reflowing all of the solder bumps simultaneously and by the same device (column 13, lines 25 – 26), as taught by Juskey, to reduce the processing time (column 13, lines 26 – 30).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terri L. Smith whose telephone number is 571-272-7146. The examiner can normally be reached on 7:30 a.m. - 4:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700